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ABSTRACT

Early psycholinguistic investigations were based on linguistic theory (primarily Chomsky's transformational theory) as a model of competence. Recent studies have suggested that naive language users neither make the same linguistic judgments as the theorizing linguists nor productively follow the linguistic rules, and that nonlinguistic knowledge may be involved in the interpretation of sentences. Thus, psychologists are beginning to question the feasibility of using linguistic theory as the model of competence and have turned instead to developing comprehensive theories that include competence and performance, linguistic and nonlinguistic knowledge, and contextual effects. If this broader psychological approach is focused on the interpretation of anomalous sentences, anomaly may well be replaced by interpretability, and interpretability may well be affected by a given context, or by imaginatively providing a context, as well as by the application of linguistic rules. A pilot study is reported, and further research questions are outlined. (Author)

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Semantic Anomaly from a Psychological Perspective

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Abstract

Early psycholinguistic investigations were based on linguistic theory (primarily Chomsky's transformational theory) as a model of competence. Recent studies have suggested that naive language users neither make the same linguistic judgments as the theorizing linguists nor productively follow the linguistic rules, and that non-linguistic knowledge may be involved in the interpretation of sentences. Thus, psychologists are beginning to question the feasibility of using linguistic theory as the model of competence and have turned instead to developing comprehensive theories that include competence and performance, linguistic and non-linguistic knowledge, and contextual effects.

If this broader psychological approach is focused on the interpretation of anomalous sentences, anomaly may well be replaced by interpretability, and interpretability may well be affected by a given context, or by imaginatively providing a context, as well as by the application of linguistic rules. A pilot study is reported and further research questions are outlined.

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In early psycholinguistic investigations, competence and performance were theoretically separated, and linguistic theories (primarily Chomsky's transformational theory) were used as the models of competence. Years of investigation provided little support for the underlying competence models, and conflicting findings were puzzling until an interaction with semantics was recognized (Greene, 1972). More recently, there has been a continuing trend away from using linguistic theory, especially syntactic theory, as a model of competence for the linguistically naive language user. For example, Ferris (1970) found that subjects judged sentences which violated Chomsky's selectional rules and/or certain "schoolroom" rules as permissible, i.e., grammatical. Ferris argued for the transferral of selectional rules from a grammar to a semantic component or to a performance theory, retaining only the rules involving the syntactic features [$\pm$ human] and [$\pm$ singular]. A more extensive testing of the compatibility of linguists' judgments with those of naive language users showed that the naive subjects agreed fairly well with each other as to the acceptability of sentences, but agreed with the linguists' intuitions regarding acceptability for only half of the sentences presented (Spencer, 1973). If linguistic rules are considered as providing a model of competence, and are also viewed as productive, one would not expect the results Kypriotaki (1973) obtained in eliciting the pronunciation and pluralization of nonsense words. She found subjects to be inconsistent in the strategies they used, and generally unpredictable in their deviations from linguistically predicted responses. Baker and Prideaux (1973) found that error frequencies in transforming sentences were not related to a formal generative grammar but were re-

lated to a performance model. Increasingly, both experimental investigations and psychological models of language are utilizing non-linguistic knowledge and abilities especially in the form of context (Doll, Taylor and Burton, 1973; Jenkins, 1973; Schank, 1972; Olson, 1970), language user limitations (Blaubergs and Braine, 1974), and processing strategies (Blaubergs, 1973).

A few language acquisition studies are also considering the primacy of semantics, the effects of context, and the use of strategies (Hutson, 1973; Macnamara, 1972; Maratsos, 1974). Preliminary attempts are being made in many of the studies reported to develop comprehensive theories that include competence and performance, linguistic and non-linguistic knowledge, units of analysis longer and shorter than the sentence, syntax and semantics, and processing strategies.

This psychological perspective may be focused on the interpretation of anomalous sentences. Linguistic theories of semantics (e.g., the Katz and Fodor model) have concerned themselves with the identification of anomaly, but even Katz (1972) acknowledges that sentences which are not themselves anomalous may contain semantically anomalous subsentential constituents (i.e., the linguistic rules may be violated in a component of the sentence, but such violations may be nullified by the context provided by the rest of sentence). Some theorists have tried to account for the interpretations given to metaphor (which may be treated as a subset of anomalous sentences) within the confines of linguistic theory (e.g., Bickerton, 1969; Matthews, 1971; Thomas, 1970). Bickerton suggested "marking" a lexical item to permit its metaphorical use. Matthews criticized the circularity of Bickerton's suggestion, i.e., the metaphor has to be recognized before such marking can

can be determined and the marking determines the items' availability as a metaphor. Both Matthews and Thomas suggest that metaphors break the same selection restriction rules as anomalous sentences but that the violation is intentional, and the sentence is interpretable. Reddy (1969) is critical of linguistic attempts, especially those based on selection restriction violations, to explain metaphor, and suggests that almost all utterances (including those with concrete, nonanomalous interpretations) can be metaphors and that their interpretation as metaphors depends on the context. More generally, it is being proposed here that what is deviance for the linguist may not be deviance for the psycholinguist. Anomaly may well be replaced by interpretability, and interpretability may well be affected by a given context, or by imaginatively providing a context. Only the listener is being considered in the present study as, to quote Olson (1970), "to the speaker there is no information in an utterance" and presumably also no anamaly.

A pilot study was conducted investigating the imaginative provision of a context as a mechanism for the interpretation of an otherwise uninterpretable sentence.

Method: Fifteen graduate students were asked to place 15 sentences into one of three categories. The three categories were identified as follows:

A) those sentences that don't make any sense at all, that cannot be interpreted, e.g., Procrastination drinks duplicity.

B) those sentences that have a metaphorical interpretation or that can be understood by extending the usual meaning of some part of the sentence, e.g., The volcano burped.

C) those sentences that may appear nonsensical, e.g., John thinks with a fork.

yet in an appropriate context can be understood, e.g., How do you eat potatoes? John thinks with a fork.[1]

For the third category, the subjects were asked to provide the context that would make the sentences understandable. Subjects were also asked to indicate when they were doubtful about making a particular classification. Space was provided for additional comments regarding the interpretation of the sentences. The subjects received the sentences in booklet form, one sentence to a page. The order of presentation was not varied. The sentences came from a variety of sources including linguistic articles. (See Appendix A) Additional sentences were created to represent hypothetical rule violations (particularly selection restrictions and major category rules).

Results: The categorizations given for each of the 15 sentences are shown in Table 1.[2] Overall, on inspection of the table, it is apparent that over half (138/225) of the anomalous sentences were classified as interpretable (category B or C). The interest here is not so much in the individual differences obtained for the various sentences which overall were few (only sentences 4, 10, and 12 had zero responses for any category, although several others had noticeably skewed distributions), but in how the subjects interpreted the sentences. Categories B and C were not well-differentiated by the subjects: for some sentences similar reasons were given for choices in differing categories: thus, the comparison will only be made between "uninterpretable sentences (Category A) and sentences which are "interpre-

table metaphorically or with appropriate context provided" (Categories B and C). (See Appendix B for some sample responses). It appears that some subjects can interpret sentences by providing an appropriate context or a metaphorical extension for sentences that other subjects classify as uninterpretable and that linguists classify as anomalous. Further, the context provided and the metaphorical extensions show great variation.

Further research is indicated and will be conducted with the following questions in mind: firstly, how are linguistic judgments (e.g., the rating of anomaly) affected by psychological factors? Specifically it is predicted that subjects will rate sentences as less anomalous after they have produced a contextual explanation for the apparent anomaly, and parallel to the findings regarding ambiguity (Carey, Mehler, and Bever, 1970), they may not perceive the anomaly at all if the sentence is first presented in an appropriate context. Secondly, what is the nature of the relationship between anomaly and ambiguity? Mistler-Lachman (1972) found that meaningfulness judgments (an aspect of anomaly if extreme anomaly is viewed as meaninglessness) did not require ambiguity resolution. However, it is possible that anomaly resolution (i.e., removal) may produce ambiguity. If so, ambiguity as a linguistically determinable construct may be as meaningless as anomaly when the language user is considered. Already, in the studies reported, and in others, it has been shown that linguistically determined ambiguity is not invariably or even consistently reflected in performance. The possibility is being suggested that ambiguity may also not be definable at all out of context, since previously unconsidered contexts may result in new ambiguities. Again, the

armchair linguist is seen as eminently fallible, and abstract linguistic theory that fails to consider the possible interactions with psychological (or performance or contextual, etc.) variables as fallacious. Thirdly, how do instructions and the experimental microcosm affect the subjects' behavior? This is a problem for the psycholinguist. Subjects do use various strategies (Blaubergs, 1973; Kypriotaki, 1973; Olson, 1970) and the strategies may be of as much importance in understanding cognitive functioning as the underlying competence that the strategies may be "distorting." Fourthly, how do individual differences, especially creativity affect language use and language judgments? Perhaps, linguist vs. non-linguist differences may be part of this question.

In conclusion, the boundary between competence and performance as exemplifications of linguistics and psychology is now not only permeable in one direction, from competence to performance, but in the other as well: performance variables are restructuring theories of competence.

Footnotes

1. The examples were taken or adapted from linguistic articles: Bickerton, 1969; Matthews, 1971; and Shuy, 1973 respectively.
2. Nine choices were marked as uncertain, but have been included in the tabulation as in no case did any one categorization of a sentence receive more than one uncertain response.

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TABLE 1

Number of Ss Categorizing Each Sentence as A, B, or C

Sentence	A	B	C	Unclassified
1	10	2	2	1
2	3	10	2	0
3	7	6	2	0
4	0	8	5	2
5	4	5	6	0
6	5	5	5	0
7	7	7	1	0
8	5	7	3	0
9	6	5	4	0
10	11	0	4	0
11	11	2	2	0
12	0	11	4	0
13	6	3	6	0
14	1	12	2	0
15	7	4	3	1
Totals	83	87	51	4

APPENDIX A.

Anomalous Sentences:	Source:	Description:
1. The citizen rained.	-	SR (requires "rainable" subject)
2. She killed the door.	-	SR (requires animate object)
3. The kitten shivered the turnip.	-	SC (requires transitive verb)
4. The house faced the car.	Bickerton	SR (requires dynamic object)
5. A flour is sometimes white.	-	SR (violates mass-count distinction, but is a homophone); needs context
6. Your air is dripping on the table.	Reddy	
7. Colorless green ideas sleep furiously.	Chomsky	the traditional anomalous sentence with several selection retriction violations
8. The cabbage was married yesterday.	-	SR (requires human subject)
9. The chair is a sheep.	Steinberg	amphigorous (nonsense)
10. The boy amused the picture.	Thomas	SR (requires animate object)
11. The lamp ate a heavy meal.	-	SR (requires animate subject)
12. The dandilion shattered.	-	SR (requires rigid subject)
13. The clown died the acrobat.	-	SC (transitive verb required)
14. The sailor's profanity curled the seminarian's green ears.	Matthews	SC (transitive verb required)
15. The mare neighed the saddle.	-	

SR - selection restriction violation

SC - subcategorization violation

APPENDIX B.

Subjects' explanations of their categorization of two sentences.

Your air is dripping on the table.

A: __ Liquid things drip--I don't think gases drip--they would be in liquid form then.

B: __ air = liquid oxygen in an open container such that it is dripping on the table

__ Someone with a cold, breathing on a table from which others may eat.

__ you're talking too much at dinner

C: __ Could be that someone has blown up a balloon and set it on the table--Another person notices it is slowly leaking out.

__ Context in which someone is acting very snobbish or super-sophisticated.

__ Chemistry lab--oxygen or nitrogen being prepared--condenses + drips on table. Observer says "Your air . . . etc."

__ liquid oxygen

__ someone is obnoxious in a conversation.

The cabbage was married yesterday.

A: __ Cabbages don't marry.

B: __ Mixed with some other food to complete a recipe.

__ When it is planted--it sort of becomes married.

__ Fertilized by bee.

__ If you were comparing someone to a cabbage.

C: __ What did Fanny the cabbage do yesterday?

__ In a foreign country, an ugly girl is referred to as a "cabbage".

Q Do you know what happened to Martha?

A Yes, the cabbage, etc.

__ The cabbage was already picked up.